PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1) EJH

Date of mailing *day/month/year*	12 APR 2005
Applicant's or agent's file reference 12383280/EJH	IMPORTANT NOTIFICATION

International Application No.	International Filing Date	Priority Date
PCT/AU2003/001647	9 December 2003	9 December 2002

Applicant

THE CORPORATION OF THE TRUSTEES OF THE ORDER OF THE SISTERS OFMERCY IN QUEENSLAND et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translations to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide

Name and mailing address of the IPEA/AU	Authorized officer
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	ANITA PREMKUMAR Telephone No. (02) 6283 2515

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 12383280/EJH	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. **PCT/AU2003/001647**	International Filing Date *(day/month/year)* 9 December 2003	Priority Date *(day/month/year)* 9 December 2002

International Patent Classification (IPC) or national classification and IPC

Int. Cl. [7] C12N 5/08, A61K 39/395

Applicant

THE CORPORATION OF THE TRUSTEES OF THE ORDER OF THE SISTERS OFMERCY IN QUEENSLAND et al

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheet(s).

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of the report
25 June 2004	6 April 2005
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer **ANITA PREMKUMAR** Telephone No. (02) 6283 2515

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU2003/001647

I. Basis of the report

1. With regard to the elements of the international application:*

[X] the international application as originally filed.

[ ] the description, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages , received on with the letter of

[ ] the drawings, pages , as originally filed,
pages , filed with the demand,
pages , received on with the letter of

[ ] the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

[ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

[ ] the language of publication of the international application (under Rule 48.3(b)).

[ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

[ ] contained in the international application in written form.

[ ] filed together with the international application in computer readable form.

[ ] furnished subsequently to this Authority in written form.

[ ] furnished subsequently to this Authority in computer readable form.

[ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

[ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. [ ] The amendments have resulted in the cancellation of:

[ ] the description, pages

[ ] the claims, Nos.

[ ] the drawings, sheets/fig.

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	**18-21, 23-26 and 28**	**YES**
	Claims	**1-17, 22 and 27**	**NO**
Inventive step (IS)	Claims	**none**	**YES**
	Claims	**1-28**	**NO**
Industrial applicability (IA)	Claims	**1-28**	**YES**
	Claims	**none**	**NO**

2. Citations and explanations (Rule 70.7)

The invention lies in a method of generating T-cells specific for an antigen. The method involves co-incubation of mature antigen presenting cells, $CD4^+$ T-cells and $CD8^+$ T-cells for a period of time sufficient to generate a population of $CD8^+$ T-cells specific for the antigen. The antigen presenting cells may be a dendritic cell. The $CD8^+$ T-cells produced could be used in immunotherapy.
A number of prior art documents disclose the use of the method described in the invention for the generation of cytotoxic T-cells.

The following documents identified in the International Search Report have been considered for the purposes of this report:

D1: Szmania, S., *et al*; Blood, (2001), 98 (3): 505-512.

D2: Peggs, K., *et al*; Blood, (2002), 99 (1): 213-223.

D3: Re, F., *et al*; Blood, (2002), 100 (11): Abstract No. 2663.

D4: Verfuerth, S., *et al*; Blood, (2000), 96 (11) Part 1: 27a.

D5: Hoffmann, T. K., *et al*; Cancer Research, (2000), 60 (13): 3542-3549

D6: Perez-Diez, A., *et al*; Cancer Research, (1998) 58 (23): 5305-5309

D7: Ito, A., *et al*; Journal of Gastroenterology and Hepatology, (2001) 16 (3): 309-316.

D8: Cho, H. I., *et al*; Journal of Immunotherapy (2001) 24 (3): 242-249.

D9: Peggs, K., *et al*; Blood, (2001), 97 (4) 000: 994-1000.

Supplemental Box V
(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of 2

Novelty:
The invention disclosed in claims 1-17, 22 and 27 is not novel when compared with prior art documents D1, D2, D3, D4, D5, D7, D8 and D9.
The invention is a method of generating T-cells specific for an antigen. The method involves co-incubation of mature antigen presenting cells, $CD4^+$ T-cells and $CD8^+$ T-cells for a period of time sufficient to generate a population of $CD8^+$ T-cells specific for the antigen. All the citations disclose a similar method of producing cytotoxic T-cells for use in immunotherapy.

The citations disclose methods of generating cytotoxic T lymphocytes that could be used in immunotherapy. In the citations dendritic cells were pulsed with a peptides or antigens from CMV, MART1 antigen of tumours, EBV antigens, Aspergillus antigens, apoptotic tumour cells, or HCV peptides. The pulsed dendritic cells were then co-cultured with donor T-cells (containing both CD4+ and CD8+ T-cells) or auotologus peripheral blood lymphocytes (which inherently contain both CD4+ and CD8+ T-cells) to generate CD8+ T-cells specific to a given antigen or peptide. As such the citations disclose all the essential features of claims 1-17, 22 and 27 and therefore the invention is not novel.

Inventive Step:

The invention defined in claims 17-21, 23-26 and 28 does not involve an inventive step in the light of D1, D2, D3, D4, D5, D6, D7, D8 and D9. The invention lies in a method of treating a subject with CD8+ T-cells that have been generated by the method disclosed in the previous claims. Although the citations do not specifically treat subjects with the T-cells generated by the method disclosed, they do provide a sign post for using the cells generated by using proteins as functional adjuvants to generate CD8+ T-cells which can be used to enhance immune response to tumour associated antigens or to infections caused by a pathogen. As such, having read the citations the PSA would be lead to using these peptide/antigen primmed T-cells in the treatment of cancers or infections. Therefore the PSA would directly and without difficulty, by routine steps, arrive at a solution that is the same as the claimed solution, therefore the claims lacks an inventive step.